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AMSAT NEWS SERVICE
ANS-351

ANS is a free, weekly, news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org

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SB SAT @ AMSAT $ANS-351.01
ANS-351 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 351.01
>From AMSAT HQ SILVER SPRING, MD.
December 16, 2012
To All RADIO AMATEURS
BID: $ANS-351.01

Kline School "Out of This World Experience" Raises $6500 for AMSAT Fox

Kline School had the distinction of being invited to contact Commander Kevin Ford aboard the International Space Station on Thursday, December 6 via an ARISS contact.

During this live event, students had the opportunity to have their questions answered by an astronaut living in space. In preparation for the ARISS contact, students engaged in NASA class lessons on Building the ISS and What Life is Like Aboard the ISS. They studied experiments and tasks taking place on the ISS to help formulate expedition related questions. Students also learned about the forms and sources of energy that help to sustain the station.

Teachers at Kline School wrote, "We think of the ARISS contact as the real world application of our students' studies of science, technol-

ogy, engineering and math (STEM)".

Reaching beyond content, students launched a Spell-A-Thon and raised $6,500 dollars to purchase six-sets of solar panels to help AMSAT fly Fox-1, an amateur radio satellite. The solar panels will provide power to the satellite while in space. Students are proud of their AMSAT membership, too.

ARISS is a cooperative venture of the National Aeronautics and Space Administration (NASA), the American Radio Relay League (ARRL), the Radio Amateur Satellite Corporation (AMSAT), and other worldwide amateur radio groups and international space agencies. These ARISS partners organize scheduled 10-minute interactive contacts via amateur radio with the help of experienced amateur radio volunteers.

More information and a photo will be published in an upcoming issue of the AMSAT Journal.

For more information about Kline School's ISS contact and related events visit: http://www.klineschool.com
https://www.facebook.com/pages/Kline-School/153838291839

[ANS thanks the Kline School for the above information]

AMSAT Submits a Second NASA ELaNa Proposal

The official name of the project is "RadFxSat" and it is a joint project with the Institute for Space and Defense Electronics (ISDE) at Vanderbilt University. AMSAT is providing the satellite bus (Fox-1B) and ISDE is providing the experiment payload. The primary mission is to advance the state of the art in understanding the effects of space radiation on electronic components.

This is the first AMSAT satellite with science as the primary mission. This is very exciting as it potentially opens up new launch opportunities. Since the data downlink and power required by the experiment are modest, we expect to be able to operate the science payload and the ham radio transponder simultaneously.

The satellite hardware design is the same as Fox-1 but there will be substantial AMSAT work in systems engineering, project management, software development, satellite construction and testing.

We requested a launch in the 2nd half of 2014 to a 650 km sun-synchronous orbit which is the same as we requested for Fox-1. As in our previous proposal, we also noted that the mission requirements can be met over a wide range of orbits. The key elements are the need for a high enough apogee to provide significant exposure to space radiation and a minimum 10 year orbit lifetime.

While there can be no guarantee that our proposal will be accepted by NASA, we believe that in its 241 pages (!) we have made a strong case.

NASA is expected to announce the accepted proposals at the end of January 2013.

[ANS thanks AMSAT Vice-President Engineering Tony Monteiro, AA2TX for the above information]

AMSAT SKN ON OSCAR 2013 In Memory of W1BIH/PJ9JT

You are cordially invited to participate in Straight Key Night on OSCAR 2013, conducted by AMSAT for all radio amateurs throughout the world. This year's event is dedicated to the memory of John Thompson, W1BIH/PJ9JT, who passed away in 2012, aged 96. Although known primarily as an HF DXer and contester, John was also active on OSCAR, mostly on CW.

As always, SKN on OSCAR is simple and informal. Just operate CW through one or more satellites on 1 January 2013 (0000 to 2400 UTC), using a straight hand key. There is no need to send in a log, but all participants are encouraged to nominate someone they worked for Best Fist. Your nominee need not have the best fist of anyone you heard, only of those you worked. Send your nomination to w2rs at amsat.org. A list of those nominated will appear in ANS and the AMSAT Journal.

[ANS thanks Ray Soifer for the above information]

FITSAT-1 LED Beacon Seen From Space

A test of the FITSAT-1 LED optical beacon that took place on December 11 GMT over Japan was successful.

FITSAT-1 flashed the optical beacon over the USA on December 12 and on December 13 over the British Isles and Europe. No reports of optical detection were received from the USA or Europe.

In a clear night sky with no moon the FITSAT-1 optical beacon is visible using binoculars.

The latest FITSAT-1 satellite news is posted at:
http://www.fit.ac.jp/~tanaka/fitsat.shtml

A photo of the visible beacon is posted at:
http://www.jinkou-eisei.jp/FITSAT/images/121212_watanabe.jpg
http://www.jinkou-eisei.jp/FITSAT/images/121211_m.jpg

FITSAT-1 is a CubeSat developed by students at the Fukuoka Institute of Technology (FIT) in Japan. As well as the optical LED experiment the satellite carries an amateur radio payloads: a CW beacon on 437.250 MHz, a telemetry beacon on 437.445 MHz and a high-speed data downlink on 5840.0 MHz.

[ANS thanks the FITSAT-1 team for the above information]

QST October 2012 SatCat Interface for FT-817 For Sale at ARRL

The satellite computer aided tuning interface described in October, 2012 QST (pp. 40-43) for use with SatPC32 and the Yaesu FT-817 radio is being offered for sale by the ARRL Education & Technology Program

(ETP).

The interface was developed by Mark Spencer, WA8SME, as part of resource development for the ARRL ETP and is priced to recover cost plus a small increment toward development as well as a cost share donation to AMSAT. The interface is fully described in the article published in October 2012 QST on pp. 40-43.

You may order the board and programmed PIC for a cost of $20; to order the full kit including all of the parts, the cost is $35.

To order please send the following either by mail or email as follows:

+ Your name and shipping address
+ Phone number and email address
+ Item you are requesting
+ Enclose a check for the appropriate amount, payable to ARRL ETP, sent to attention of ARRL Education Services

Send orders to:

ARRL Education Services, ATTN: Amy Strickland
225 Main Street
Newington, CT 06111

Please contact Amy in ARRL Education Services at astrickland@arrl.org with any questions about ordering.

Please contact Mark Spencer at mspencer@arrl.org with questions about the interface design and specifications.

[ANS thanks Mark Spencer, WA8SME for the above information]

V/U/Wx Receive Pre-Amplifier Available Through AMSAT Store

AMSAT-NA is pleased to announce an inexpensive, broadband VHF/UHF/WX satellite receive-only preamplifier.

Key features:

Ready to operate--not a kit! Fully assembled, tested, and installed in a metal enclosure with female BNC connectors on input and output.

It is based on the MAR 7 device, and covers 100 MHz to 500 MHz. This includes the137 MHz WX, 2M, and 70cm satellite bands.

Operates from +9-15V DC (a fresh 9V battery works great!). Perfect for portable operations using dual band hand-held Yagis like the ARROW, Cheap Yagi, etc. Just put it inline on the correct receive band for operations in either mode U/V or V/U. You won't believe what you've been missing!

Includes low power (about 5W) protection diode on the input for accidental transmissions into the input. (This preamp is not RF switched. It must be protected from inadvertent repeated or high power transmission RF using a relay or diplexer.)

Full details and schematic can be found in the November/December 2012 AMSAT Journal article by Mark Spencer, WA8SME, or downloaded from the item in the Hardware section of the AMSAT Store:

http://store.amsat.org/catalog/

The assembled and tested kit is priced at $50 USD plus shipping.

Proceeds from the sale of this item will help fund the AMSAT Fox Family of satellites!

This equipment was developed as part of the ARRL Education and Technology Program.

[ANS thanks Mark Hammond, N8MH for the above information]

WA8SME Receives YASME Foundation Excellence Award

Mark Spencer, WA8SME, has received the Excellence Award from the YASME Foundation (yasme.org). The following is an excerpt from the OPDX Bulletin 1090, December 10, 2012:

"The Yasme Excellence Award is awarded to individuals who through their own service, creativity, effort and dedication have made a significant contribution to amateur radio. The contribution may be in recognition of technical, operating or organizational achievement, as all three are necessary for amateur radio to grow and prosper. The Yasme Excellence Award is in the form of a cash grant and an individually-engraved crystal globe."

The Board of Directors of The Yasme Foundation announced the award:

Mark Spencer, WA8SME, for his instrumental work in the ARRL Teachers Institute and other training efforts, development of PIC microcontroller projects and books for amateurs, and work with leaders in student and scientific teams applying amateur radio to scientific projects and experiments.

AMSAT congratulates to Mark Spencer WA8SME, recipient of the YASME Foundation Excellence Award

[ANS thanks John Papay, K8YSE and YASME Foundation for the above information]

NASA TV Coverage Set for December 19 Soyuz Space Station Crew Launch

NASA Television will provide live coverage of the December 19 launch and docking of the next crew members to the International Space Station. Two of the crew members have their amateur radio license.

Tom Marshburn, KE5HOC of NASA, Roman Romanenko of the Russian Federal Space Agency (Roscosmos) and Chris Hadfield, KC5RNJ/VA3OOG of the Canadian Space Agency are scheduled to launch to the space station in their Soyuz TMA-07M spacecraft at 6:12 a.m. CST (6:12 p.m. Baikonur time) Wednesday, Dec. 19, from the Baikonur Cosmodrome in Kazakhstan. NASA TV launch coverage will begin at 5 a.m. and include video of that day's activities leading to the crew boarding its spacecraft.

The trio will dock the Soyuz spacecraft to the station's Rassvet mod-

ule at 8:10 a.m. Friday, Dec. 21. NASA TV coverage of docking begins at 7:30 a.m. About three hours later, hatches will open between the Soyuz and the station. Marshburn, Romanenko and Hadfield will be greeted by Expedition 34 Commander Kevin Ford of NASA and flight engineers Oleg Novitskiy and Evgeny Tarelkin of Roscosmos, who have been living and working on the orbiting laboratory since late October. NASA TV's hatch opening coverage begins at 10:15 a.m.

Marshburn, Romanenko and Hadfield will remain aboard the station until

May 2013. Ford, Novitskiy and Tarelkin will return to Earth March 15, leaving Hadfield as the first Canadian commander of the space station.

The full schedule of the Soyuz prelaunch, launch and docking coverage includes (all times Central USA which is UTC-6):

Friday, Dec. 14
1 p.m. -- Video file of Expedition 34/35 crew activities in Baikonur, Kazakhstan

Monday, Dec. 17
11 a.m. -- Video file of Expedition 34/35 spacecraft encapsulation, rocket mating and rollout in Baikonur, Kazakhstan

Tuesday, Dec. 18
11 a.m. -- Video file of Expedition 34/35 Russian State Commission meeting and final pre-launch crew news conference in Baikonur, Kazakhstan

Wednesday, Dec. 19
5 a.m. -- Expedition 34/35 launch coverage (launch at 6:12 a.m.; includes video of the crew's pre-launch activities at 5:15 a.m.)
9 a.m. -- Video file of Expedition 34/35 pre-launch, launch and post-launch interviews

Friday Dec. 21
7:30 a.m. -- Expedition 34/35 docking coverage; docking at 8:10 a.m. followed by the post-docking news conference from Mission Control in Korolev, Russia
10:15 a.m. - Expedition 34/35 hatch opening and welcoming ceremony (hatch opening at 10:45 a.m.)
1 p.m. -- Video file of Expedition 34/35 docking, hatch opening and welcoming

For NASA TV streaming video, schedule and downlink information, visit: http://www.nasa.gov/ntv

[ANS thanks NASA for the above information]

Receive Satellite Pass Predictions via Your APRS Radio

The KJ4ERJ satserver will send live tracking data to your APRS radio anywhere, anytime.

1. Just send an APRS message to "ISS" (without the quotes) from any APRS radio (on the national APRS channel).

2. If you are in range of the global APRS network (an IGate nearby) the satserver will respond with the time to AOS and the direction

of AOS, max elevation and LOS.

3. This also works for other satellites. For example, send a message to "FO29" (without the quotes) and get its prediciton for your location.

4. The satserver will use the last APRS position you have transmitted.

5. To actually work APRS via ISS, you will have to QSY to the ISS channel 145.825 and change your path to via ARISS for the pass (instead of the usual WIDE2-2 for terrestrial APRS).

Example of the the types of responses as collected by APRS.FI messages page are posted at:
http://aprs.fi/?c=message&limit=25&call=ISS

For a full description, see: http://aprsisce.wikidot.com/doc:satsrv

[ANS thanks Bob Bruninga, WB4APR for the above information]

Carrier Detected on LO-19 Beacon Frequency

Mark Hammond, N8MH reports that LO-19, non-operational for amateur radio use, is still transmitting a very weak continuous carrier on its former 437.1250 MHz CW Mode U TLM beacon frequency.

He wrote, "This weekend I listened again for LO-19. I could always hear a very weak continuous carrier (actually, first saw it using audio FFT software). Yesterday (12/9/12) on a high 50-ish degree elevation pass, it was there. It's right on frequency, right on time with AOS/LOS, the Doppler correction from SatPC32 is right on target. The bird was in daylight, but I expect its batteries are still good so I bet you can hear it in eclipse as well. You might have fun listening for it, as a weak signal source. If you can hear LO-19's carrier, your system is pretty up to snuff. Or, use some audio spectrum software and you can "see" the carrier even if you can't hear it on your speaker."

Additional LO-19 reception reports are confirmed by WA8SME, K8YSE, and OZ1MY.

[ANS thanks Mark Hammond, N8MH for the above information]

December 17 Lunar Impact Final Experiment for GRAIL Probes

Twin lunar-orbiting NASA spacecraft that have allowed scientists to learn more about the internal structure and composition of the moon are being prepared for their controlled descent and impact on a mountain near the moon's north pole at about 2:28 p.m. PST (5:28 p.m. EST) Monday, Dec. 17.

The mountain where the two spacecraft will make contact is located near a crater named Goldschmidt. Both spacecraft have been flying in formation around the moon since Jan. 1, 2012. The first probe will go down, at 2:28:40 p.m. The second probe will about 20 sec-

onds later.

Both spacecraft will hit the surface at 3,760 mph (1.7 kilometers per second). No imagery of the impact is expected because the region will be in shadow at the time.

The probes will conduct one final experiment before their mission ends. They will fire their main engines until their propellant tanks are empty to determine precisely the amount of fuel remaining in their tanks. This will help NASA engineers validate fuel consumption computer models to improve predictions of fuel needs for future missions.

Because the exact amount of fuel remaining aboard each spacecraft is unknown, mission navigators and engineers designed the depletion burn to allow the probes to descend gradually for several hours and skim the surface of the moon until the elevated terrain of the target mountain gets in their way.

For more information about GRAIL, visit: http://www.nasa.gov/grail
SpaceRef.com posted this news at:
http://spaceref.com/news/viewpr.html?pid=39537

A video simulation of the impact is posted at:
http://www.youtube.com/watch?feature=player_embedded&v=U2OKpf7fo_w

[ANS thanks SpaceRef.com for the above information]

Satellite Shorts From All Over

+ The NASA Small Spacecraft Technology Program open solicitation from for the Flight Opportunities Program extended the proposal submission deadline to January 17, 2013 for the next selection of projects to fly on parabolic aircraft flights, high altitude balloon flights, and suborbital flights. No funding is provided for project or payload development, the flight opportunity is provided at no cost to the research team. For more information please see: https://flightopportunities.nasa.gov/afo
  An article providing examples of recent flight testing is posted at: http://tinyurl.com/NASA-FlightTest (nasa.gov) - Via N8PK

+ Flex has an interesting article on using two rigs for full duplex operations using SATPC32:
  http://support.flexradio.com/Downloads.aspx?fr=1
  Look for: A Full-Duplex VHF-UHF Satellite System using FLEX radios (via WA4SCA)

+ A recording of the December 9 AMSAT-UK 80M and 40M nets has been posted at: http://www.ham-radio.ch/kits/sdr-radio.com/mp3/

+ Luci, 9A1Z, is looking to work North America on AO-7 Mode B on CW. If you are interested in working him, please send an email to his qrz.com address for a sked. He is in JN86. (via K8YSE)

+ Photos of the new Russian Multi-purpose Laboratory Module (MLM) or "Nauka" for the International Space Station can be seen at:.
  http://www.spaceref.com/news/viewnews.html?id=1691
  The Nauka MLM is a modified version of Functional Cargo Block (FGB-2). It will dock at the Zvezda Service Module's nadir (earth facing) port and will replace the current PIRS module. PIRS will

be allowed to renter Earth's atmosphere. Launch is planned for 2013 or 2014. Nauka will serve as Russia's primary research module but will also have stowage and crew work areas.

+ Last week the Smithsonian issued the following statement regarding the passing of a unique ISS crewmember: "It is with sadness that we announce the death of Nefertiti, the "Spidernaut." This morning (Dec 3), before museum hours, a member of the Insect Zoo staff discovered Neffi had died of natural causes. Neffi lived for 10 months. She traveled over 40 million miles while living onboard the International Space Station earlier this year as part of a student-initiated experiment sponsored by NASA. After returning to Earth, Nefertiti went to the Smithsonian National Museum of Natural History's Insect Zoo to live out the remainder of her life. (via AmericanSpace.org)

+ The next Hudson Valley Satcom net will be Thursday, December 20 at 8 PM EST (UTC-5) on the 146.97 MHz MBARC Repeater (PL 100). An echolink connection is available on the N2EYH-L node. More information at: http://www.hvsatcom.org. (Stu, WA2BSS)

+ The W5KUB live webcasts are preparing for a December 29 "D-Star Live" show on http://W5KUB.com between 1000-1600 Central US time (UTC-6). Tom says there will be lots of good stuff and special guests. You will be able to ask questions of the experts. The latest news of all W5KUB broadcasts can be found on their Facebook page: https://www.facebook.com/groups/w5kub/ .

+ UniverseToday.com posted a 19 minute video of the Overview Effect showing how the view from space has altered our whole Earth perspective: http://tinyurl.com/Perspective-Video (UniverseToday.com)

+ NASA released a video and images showing the Earth at night taken by a new sensor aboard the NASA-NOAA Suomi National Polar-orbiting Partnership (NPP) satellite: http://www.nasa.gov/mission_pages/NPP/news/earth-at-night.html

+ The National Air and Space Museum Webcast Archive has several videos available at: http://airandspace.si.edu/webcasts/archive.cfm

+ The NASA Voyager 1 probe has been spotted by the SETI Institute's Allen Telescope Array (ATA) on 8419.62 MHz. The signal processing used to detect this radio signal from the outer edge of our solar system is quite educational, although the site does plug a commercial product not associated with AMSAT:
http://baudline.blogspot.com.es/2012/11/setiquest-voyager-1-redux.html

+ The "Comet Quest" game for iPhone and iPad from NASA's Jet Propulsion Laboratory can be downloaded from the iTunes Apps store at: http://bit.ly/xXhjI7. The game mimics the real Rosetta mission, and enables you to control the spacecraft, drop a lander on a comet's nucleus, then observe and record events. Players must avoid hazards and successfully transmit data to Earth, earning points for each accomplishment.

+ You and the kids can talk to Santa on the radio. Santa Claus will be appearing on 3.916 MHz. There are still a few opportunities to to tell Santa how good you've been and which rig would delight you. All net times are 2030 Central US time UTC-6)
Monday, December 17
Wednesday, December 19
Friday, December 21
Saturday, December 22
Sunday, December 23

Monday, December 24

[ANS thanks everyone for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information. And with that, please keep in mind the interstellar gas cloud that comprises Sagittarius B contains a billion billion billion (yes, that's three orders of billion) liters of alcohol. If you are doing your mathematics homework please remember to not drink and derive.

73,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM
K9JKM at amsat dot org